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PAPERS

IN

MECHANICKS.

MECHANICKS.

IN the year 1776, Mr. William Shipley, of Maidſtone, whoſe benevolence is univerſally known and acknowledged, and who has already been mentioned in this volume, page 125, preſented to the Society a contrivance, called by him *a Floating Light*, for ſaving the lives of perſons who fall over-board in the night: this contrivance appearing to the Society ingenious, and the intention humane, the Society voted their thanks and a ſilver medal to Mr. Shipley, who left with them one of the floating lights, which is preſerved in the Society's repoſitory, and of which the following is a deſcription.

The machine conſiſts of a kind of boat made of tin-plates, two feet four inches long, twelve inches wide, and twelve inches deep: the cover of this boat is ſoldered down, ſo that the whole cavity is water and air tight; but, leſt by any accident the boat ſhould be bulged, and conſequently ſunk in the water, the inſide is filled with bladders blown up with air: if therefore a hole ſhould chance to be beaten through the ſide, one or two of the bladders at moſt would be injured, and the remainder would be ſufficient to keep the machine floating on the water. That any unfortunate perſon who falls over-board in the night may have an opportunity of diſcovering the machine, there riſes from the cover or deck of the boat four upright pieces of tin, ſerving to ſupport a circle which is ſoldered to them; within this circle is another, moving on two axes, in the manner ſea-compaſſes are hung, and ſupporting the lanthorn, which is thus kept in its perpendicular poſition, notwithſtanding any irregular motion of the boat. There are alſo fixed to the ſides of the boat two projecting handles for the perſon to lay hold of, in order to ſupport himſelf till he is brought to the ſhip's ſide by the means of a rope, which being made faſt to the tin boat, and the other end remaining on board the ſhip, the people may with eaſe hawl the apparatus and man towards them.

Thus far may ſerve as a general deſcription of the floating light; but in order to facilitate the ſaving the man, another contrivance is added, conſiſting of a lanthorn, to be let down from the ſhip by a rope, and having a rope-ladder faſtened to it, whoſe uſes are more fully deſcribed in the annexed paper, as ſent by Mr. Shipley with the machine.

It may be proper to obſerve that, to prevent the light in the lanthorns being put out by the ſpray of the ſea, their tops are made double, which, though they are pierced full of holes for the purpoſe of admitting air, will effectually prevent that accident.

An Account of the Uſe of a FLOATING LIGHT, *calculated to ſave the lives of ſuch perſons as have the misfortune to fall over-board in the night.*

IT is propoſed, in order to make this float uſeful, that it be every night under the care of thoſe officers who are on the watch, and that its lamp be frequently trimmed and ſupplied with freſh oil, and its ſnuff moiſtened with oil of turpentine, that it may take fire with the leaſt touch of a lamp or candle; and whenever the ſhip is alarmed by any of the ſailors falling over-board in the night, the officer on watch may light the lamp in the lanthorn belonging to the float as expeditious as poſſible, and let the float down by the ſmall cord into the water, till it has floated about one ſecond of time, and the float is a little way out of the perpendicular of the ſmall cord; he is then to faſten the cord to the reel for the line, and toſs it over-board, which will ſink down and pull the line almoſt perpendicular: and thus it will not be liable to entangle the perſon when he ſwims to the float, who, when he has got hold of the handles of it, may move it very faſt which way he will, only by ſtriking his legs in the ſame manner as he does when he ſwims; and as the light of the lamp will be a certain direction for the perſon over-board to find the float, ſo it will alſo direct them in the ſhip to find the man and float. And when the ſhip has tacked about, and is come to the float, then the following method is propoſed, to take up the man and float into the ſhip, viz. the lanthorn with the rope-ladder may be let down from the end of a pole with a cord and pulley, till the croſs bar below the lanthorn touches the water, which may be ſeen by them in the ſhip by means of the light from the bottom of the lanthorn, and thus the man in the water may lay hold of the croſs bar, and fix his feet on one of the ſtèps of the rope-ladder; and he may then lay hold of the iron-bale of the float with one hand, and hang it on the hook of the rope above the croſs bar; which being done, by the help of a pulley faſtened to the end of a pole, the man and float may be both ſafely lifted into the ſhip.

Maidſtone, Jan. 7th, 1777.

GENTLEMEN,

I have received the ſilver medal which you were pleaſed to order me for contriving a floating light, calculated to ſave the lives of them who fall over-board in the night at ſea, which I ſupppoſe may ſerve as a hint for ſome mechanick artiſt who is well verſed in ſea affairs to improve from, by making a floating light ſo perfect as to anſwer all its wiſhed-for purpoſes.

This medal from you is by me more eſteemed than a very conſiderable pecuniary reward would be from any other body of gentlemen; and I believe that nothing can give me more pleaſure than this honorary mark of your approbation has done, unleſs it is to hear that my floating light is ſhortly uſed at ſea, and is a means of ſaving the lives of ſeveral of that claſs of people whom all maritime Powers eſteem very valuable members of ſociety, and that it may then be ranked amongſt the many uſeful contrivances that have been introduced to the Public under your patronage.

I am, with the greateſt regard,
GENTLEMEN,
Your very humble Servant,
WILLIAM SHIPLEY.

To the Society for the
Encouragement of
Arts, Manufactures,
and Commerce.

If any perſon, deſirous of conſtructing a machine for this humane purpoſe, ſhould find the foregoing deſcription wanting in any particulars, he may eaſily examine the complete apparatus which was preſented by Mr. Shipley, and is reſerved in the repoſitory of the Society for the uſe of the Public.

IN the ſecond Volume of the Tranſactions, page 191, an account is given of the invention of the Gun-harpoon, and the means taken by the Society for promoting the uſe of it: the following certificate will ſtill further prove its utility, and ſhew that all the attention paid by the Society to the introduction of that kind of Harpoon, among the veſſels employed in the Greenland fiſhery, has anſwered every expectation the Public entertained of it.

I, Sinclear Halcrow, Mate and Harpooner of the Ship Marianne, Captain William Brown, on the twenty-eighth day of June laſt, in latitude ſeventy-nine North, perceived a Whale at about three hundred yards diſtance from the boat, which we immediately purſued.

The fiſh ſwan about five hundred yards, and had nearly eſcaped by ſinking ſtern or tail foremoſt, and was entirely under water, except about four feet of her head, when I fired a harpoon from a ſwivel-gun fixed to the bow of the boat, which ſtruck the fiſh in the crown-bone of the head, into which it entered about four inches: the fiſh was much ſtunned, and lay motionleſs a little under the ſurface of the water, about a minute, when ſhe ſunk herſelf entirely, and ran out ſix lines, each containing upwards of one hundred and forty fathom: in about a quarter of an hour ſhe appeared above water, at nearly three quarters of a mile diſtant from the boats, which having approached her, ſhe ſtruck one of them a blow with her tail, which broke her keel in two, and ſtove ſeveral of her planks, by which the boat immediately filled with water, and the people were ſaved by the other boats, and carried to a piece of ice, where they remained till the fiſh was killed.

The fiſh went down again, and ſtaid under water but a ſhort ſpace: when ſhe came up, ſhe appeared in great agonies, and flounced and beat herſelf about, ſo as frequently to render any approach to her extremely dangerous; in a ſecond attempt ſhe ſtove another boat, but not ſo as to render it entirely uſeleſs.

The harpooner of this ſecond boat fixed a hand-harpoon in her; and having by this time plenty of aſſiſtance from the ſhips Achilles and Induſtry, belonging to the ſame owners, they fixed three other harpoons into her, and ſeveral lances, which enabled us to kill her, about four hours after ſhe was firſt ſtruck.

This fiſh meaſured from her noſe to her tail near ſeventy feet: her jaw-bones, which now lie in Greenland Dock, meaſure twenty-ſeven feet. She filled ſixty butts of blubber; her principal bone meaſured twelve feet and a half, and weighed twenty-ſix hundred weight.

It would have been utterly impoſſible to have ſecured this fiſh without the aid of the gun-harpoon; and if we had had another gun and harpoon in any of the other boats, the fiſh might have been killed in a fourth part of the time, and that without any danger to the lives of the men.

The above I declare to be in every particular ſtrictly true.

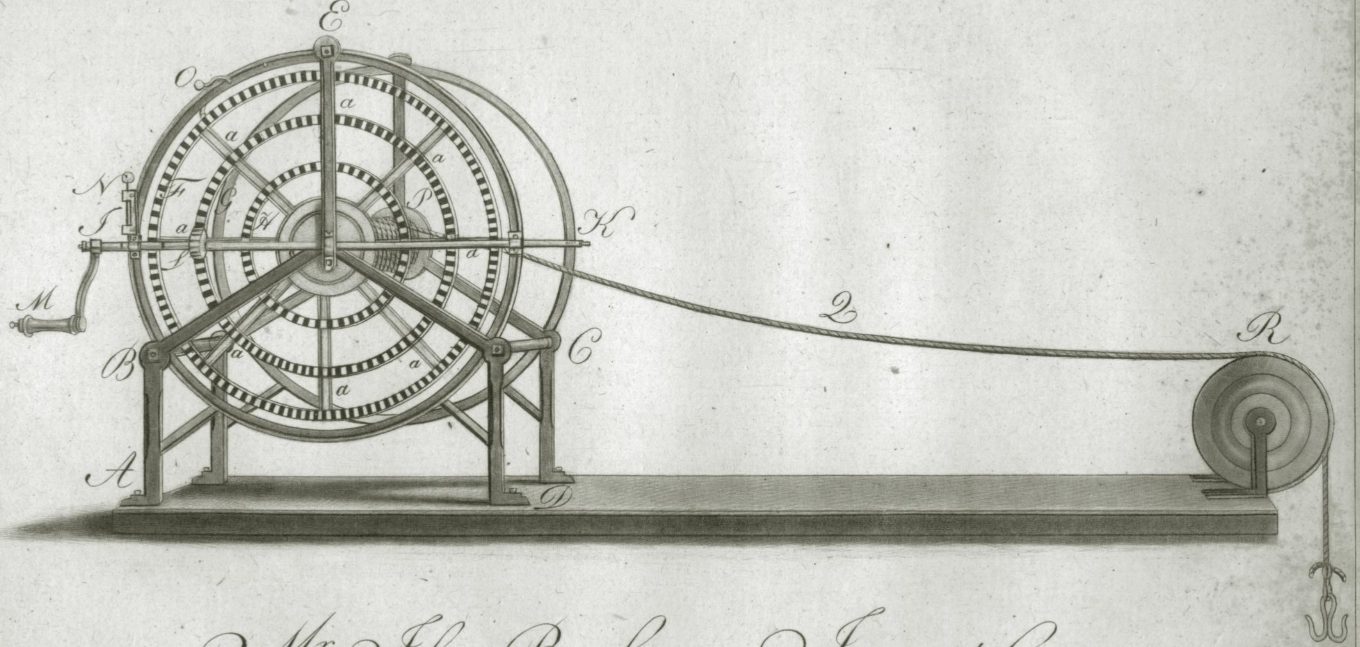
SINCLEAR HALCROW.

Lower Shadwell,
Dec. 17, 1783.

In conſequence of this certificate, Mr. Halcrow received two guineas, offered as a premium for ſtriking a Whale by the gun-harpoon in the year 1783.

THE gold medal, or twenty guineas, having been offered as a premium for the beſt Crane for Wharfs, was adjudged to Mr. John Braithwaite, who choſe the gold medal, and of whoſe Crane the following is a deſcription.

THE frame, which is wholly of caſt iron, is formed of two circles, held together by three ſcrewed bars, and ſtanding on four feet; the crane wheel, which is encloſed within the frame, conſiſts of three concentric toothed-face wheels, joined together by ſtrong bars, whoſe axle is the barrel on which the rope is coiled: in the front of the face-wheels runs a ſhifting arbor; on this arbor is a pinion, which may be brought to work in the teeth of either of the face-wheels, and thereby the power employed at the wynch



Mr. John Braithwaite's Improvéd Crane.

may be applied to raiſe a greater or leſſer weight occaſionally.

The model produced in claim of the premium is reſerved in the Repoſitory of the Society, for the inſpection of the Public.

Deſcription of the Plate of Mr. JOHN BRAITHWAIT's *improved Crane.*

A B C D E, a frame of caſt iron; *F G H*, three concentric face wheels, united together by the eight ſtraight bars, *a a a*. *I K*, a ſliding arbor, on which is fixed the pinion *L*. *M*, the wynch or handle. *N*, a ſtop, which when lifted up permits the ſliding arbor to be moved backward or forward, but, when down, retains it in its proper place. *O*, a pall or ſtop, which prevents the crane running back, but may be diſcharged at pleaſure. *P*, the barrel on which the rope is coiled. *Q*, the rope paſſing over the pulley, *R*.

A ſhort

A ſhort Account and Deſcription of Mr. MARSHAL'*s ſecret* ESCUTCHEON, *for which the Society voted him a bounty of ten guineas, February the 4th,* 1784.

THE Marquis of Worceſter, in his Century of Inventions, No. 72, after having ſpoken of three kinds of locks invented by him, ſays, "an eſcutcheon to be placed "before any of theſe locks, with theſe "properties:

"The owner, though a woman, may "with her delicate hand vary the ways "of coming to open the lock, ten millions "times beyond the knowledge of the "ſmith that made it, or of me who invented it."

Many attempts have been made to form a machine equal in its properties to the deſcription here given, and from thence it is probable, aroſe the kind of padlock which have been long made in this country in great numbers, which having ſeveral letters on different rings, can only be opened when a certain ſet of thoſe letters are arranged in one order: but this was in no degree equal to the end propoſed; for, beſides the workman who made it being at all times informed of the poſition the letters muſt be in, and conſequently enabled to open it, the letters and rings admitting of no variation of place, at the will of the owner, reſerving at the ſame time a power of opening the locks, whenever the proper arrangement became known, the ſecret was divulged, and all ſecurity at an end: but by the improvement made by Mr. Marſhall, the letters or figures allowing an almoſt infinite variety of changes, the owner may, in one minute, alter the ſecret in ſuch a manner, that even the maker would be as unlikely to open it, as he would be of gaining the higheſt prize in a lottery,

tery, by the chance of a ſingle ticket. Thus this kind of eſcutcheon is infinitely more ſecure than any hitherto in uſe, eſpecially as the alteration of the letters may be made every day for years, without recurring to their firſt ſtate; and as the owner may at one time chuſe to truſt a friend or a domeſtic with the ſecret, ſo that they might have recourſe to his valuables, &c. he may alſo, at another time, wiſh to exclude them from that privilege, which this contrivance renders very eaſy to be done. As this improvement relates only to the eſcutcheon, it is obvious that every attempt to pick the lock it covers, or to open it by means of falſe keys, is prevented; a circumſtance of no ſmall importance, when locks of a curious conſtruction, and when a number of fine wards, are made uſe of.

The eſcutcheon for which the bounty was given is reſerved in the Repoſitory of the

Fig 1

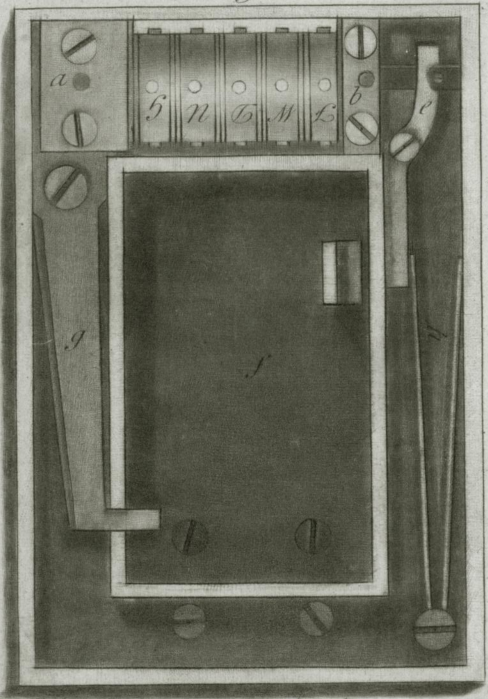
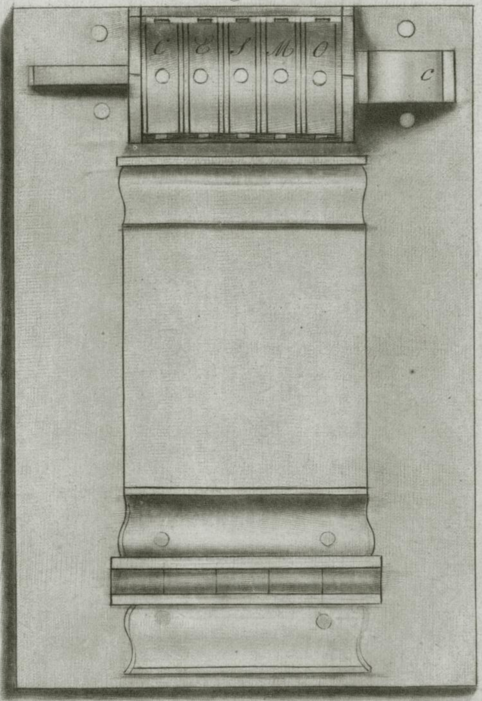
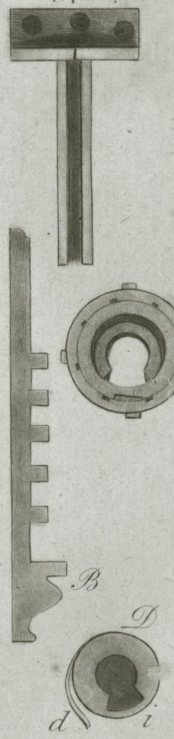


Fig 2





Mr. Timothy Marshall's secret Escutcheon.

the Society, for the inſpection of the Public.

Deſcription of the Plate of Mr. Marſhall's ſecret Eſcutcheon.

A, the barrel in which the bar *B* ſlides: part of this barrel is concealed within the rollers, but the ends of it appear at *a* and *b*, fig. 1.

B, the bar with projecting teeth by which the rollers *C* prevent its being drawn back till the nick in the receſs is brought exactly over the tooth: the ſquare end of this bar is ſeen at *c*, fig. 2.

C, a roller, of which there are five, each compoſed of two circles, the outer circle having four rows of letters at equal diſtances engraved on its ſurface, with ſmall knobs, for the more commodiouſly turning the rollers round, the inner circle *D* being movable within the outer one on the barrel *A*: to the ſurface of each of the inner circles, is faſtened a ſmall ſpring, *d* ſerving to keep the outer circle in its place, till an alteration in the poſition of the letters which are the foundation of the ſecret, is intended to be made; and within the inner circle is a receſs to prevent the bar *B* being drawn back, unleſs the teeth and the nick are in their proper ſituations, at which time, by drawing back the bar by the ſquare end, *c*, fig. 2. which is otherwiſe retained in its proper place by means of the feather-ſpring *h*, the catch *e*, fig. 1. is releaſed, and the door *f* of the eſcutcheon is thrown open by the ſpring, *g*.

When an alteration of the arrangement of the letters on which the ſecret depends, is deſired, the bar *B* muſt be held back by the ſquare end *c*, while one or more of the outer circles are turned round till the letters choſen are uppermoſt; the eſcutcheon cannot afterwards be opened till that ſame arrangement is again made, and ſo on according to whatever ſituation of the letters the owner may chooſe: hence it is evident that which ever of the letters have been choſen muſt, at the time of opening the eſcutcheon, be brought in one line to the upper ſurface of the rollers; and then the bar being drawn back, the door of the eſcutcheon will be thrown open.

Fig. 1. repreſents the under or inner ſide of the eſcutcheon, and fig. 2, the upper or outer ſide, and appears as when fixed over a lock, and covering the key-hole.

Nov. 24, 1784.

THE ſilver medal was voted to Mr. Taylor, of Petworth, for his improvement of Latch Locks, of which the following is an account, extracted from his letter on that ſubject.

The latch, or ſpring bolt of door locks on the common conſtruction (whether mortice, caſe, or rimmed locks) is very liable to be out of order, as ſoon as the oil is dried up between the tumbler and tail of the latch, from the erroneous manner in which the tumbler is made to act; and more eſpecially, when the lower arm of the tumbler is engaged, for then the friction is very great, and the bolt very hard to be moved. To remedy theſe defects, I beg leave to ſubmit to the judgement of the Society, a method I have lately thought of, and put in execution, of conſtructing, at a ſmall expence, the tumbler and tail of the latch or ſpring bolt, in ſuch manner, that the lock may be conſtantly uſed for many years, without any oil to thoſe parts, and always move alike both ways, that is, by turning the knob or handle either to the right or left, and with leſs force of the hand in turning it.

The alteration which conſtitutes the difference between this lock and thoſe in common uſe is, that the tumbler is reverſed,

verſed, ſo that the curved ſide of the tumbler act againſt two ſtubs fixed on the tail of the latch, and thruſts it eaſily back, whether the knob is turned to the right or left in opening the lock; behind the tail of the latch is alſo fixed a guide, having within it a groove, wherein runs a ſmall friction-wheel, ſerving to keep the latch in its direct ſituation, and leſſen its friction: the arms of the tumbler are not ſo long as they are generally made, becauſe the latch or ſpring bolt muſt move the eaſier by their being ſhorter.

By the above conſtruction, thoſe parts of the tumbler and tail of the latch, that are in contact, move in a line, the neareſt to the chord of a circle, whoſe radius is the arm of the tumbler, and conſequently paſs over the greateſt ſpace under the leaſt angle poſſible. The friction-wheel beforementioned, being placed on a ſtub riſing from the tail of the latch, and in a line with the centre of the tumbler, and having the ſpring that puſhes the latch or bolt forward, touching alſo in the ſame line with the friction-wheel, is a ſtill further improvement for all kind of latch locks, though low-priced locks will do very well according to this conſtruction without it.

It is preſumed the foregoing deſcription will enable any workman to make theſe locks; but leſt that ſhould not be the caſe, one of them is reſerved in the Society's Repoſitory, for the inſpection of the Public.